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AMERICAN ENGINEER

Vol. 19——OCTOBER 1949——No. 10

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

In This Issue—

ENGINEERS AGAINST DEATH

PROCLAMATION

By the President of the United States

WHEREAS *the lives of thousands of our fellow Americans—men, women, and children—are destroyed each year by fire and countless others suffer permanent disability from the same cause; and*

WHEREAS *preventable fires also destroy an untold amount of irreplaceable natural resources and of private and public property, including forests and farms, schools and churches, hospitals, homes, and factories; and*

WHEREAS *for these reasons the prevention of fires is of the utmost concern to every American citizen:*

NOW, THEREFORE, *I, HARRY S. TRUMAN, President of the United States of America, do hereby designate the week beginning October 9, 1949, as Fire Prevention Week.*

I earnestly request that during that week all of us undertake a year-round campaign against destructive fires in our homes and in our communities. I also request that State and local governments, the American National Red Cross, the National Fire Waste Council, the Chamber of Commerce of the United States, business, labor, and farm organizations, churches, schools, civic groups, and agencies of public information, including newspapers, magazines, and the radio, television, and motion picture industries, cooperate fully in the observance of Fire Prevention Week. I direct the appropriate agencies of the Federal Government to assist in arousing public awareness of the need for active participation in this crusade against the frightful toll of life and property resulting from fires.

IN WITNESS WHEREOF, *I have hereunto set my hand and caused the Seal of the United States of America to be affixed.*

DONE *at the City of Washington this second day of August in the year of our Lord nineteen hundred and forty-nine, and of the Independence of the United States of America the one hundred and seventy-fourth.*

Harry Truman

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ENGINEERS AGAINST *Death*

Mrs. Green heard the telephone ringing out in the hall, and waited to see if Freddie would answer it. She was trying to finish ironing her husband's shirts before lunch, and didn't want to be disturbed. The telephone rang three more times, but Freddie evidently was too absorbed with his toys to hear it. She stepped out into the hall and picked up the receiver.

It was Mr. Green, calling from the store.

"Now, don't get excited," he began, sounding unusually excited himself. "A man tried to rob me a few minutes ago, but he didn't have much luck. Remember what I told you about this new safe, which can't be opened until thirty minutes after you turn the combination? I told the fellow how it worked, and he decided not to wait around that long.

"Instead, he saw that I had just filled up a brief-case with money which I was going to deposit at the bank. He grabbed it and dashed out of the store, but dropped it immediately when the thing seemed to be exploding in his hand. It was that special bag I bought which shoots blank cartridges and begins to smoke when anybody carries it without adjusting it first. The cops have the fellow already . . ."

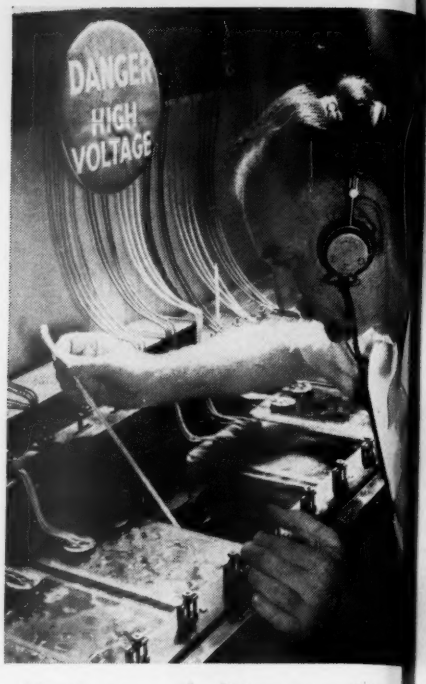
Mrs. Green decided that lunch could wait. This was the first real news she had run across in weeks, and there were at least a dozen friends she wanted to share it with immediately. She was making her third call when she remembered: She had forgotten to switch off the iron!

Rushing back into the kitchen, she found that Mr. Green's supply of wearable shirts had just been reduced from twelve to eleven. There was a dark brown scorched spot on the back of the half-ironed shirt, but, strangely enough, the cloth had not blazed up. She was very much impressed by the fact that the neglected iron had not started a fire . . .

What Mrs. Green didn't know was that her iron had been manufactured with just such forgetful people as herself in mind. It was equipped with a device which automatically kept it from reaching a temperature that would cause cloth or wood to blaze up.

She didn't realize, either, that the iron had gone through countless tests to make sure that it would always work the way the manufacturer intended. The same men who had made those tests came to the rescue of the Green family and other American families hundreds of times every day, in homes, offices, and stores. They did their rescue work in advance, by testing and inspecting equipment to guard against faulty manufacture and to see that it was useful in protecting people from their own carelessness. The only sign of their work was a small label on various devices with the words, "Underwriters' Laboratories, Inc., Inspected," or the initials UL on a tag or nameplate.

At the main laboratory in Chicago, these engineers had looked over Mr. Green's safe when the manufacturer first perfected it, to make sure that the time-lock would work right and that robbers couldn't open the safe more quickly regardless of how impatient they might get. If the robber had tried to blast the door open, or drill through it, or use a torch on it, his own actions would have set off the alarm to bring police to the scene. The engineers knew the alarm would work, because they themselves had tried every possible way to by-pass the mechanism . . . in the interests of science.



Here's a man who listens to moisture. He is shown checking the temperature of a warm water bath in which samples of plastic-insulated wire are immersed during water-absorption tests. By listening to the hum of the current in the earphones the engineer can determine whether the wires will leak electricity when wet.

Engineers Tried Tests

The engineers had also tried a dozen different tests on that tricky money bag. They wanted to be sure it would always act up when anyone unfamiliar with it tried to sneak away with it.

Freddie, who was too absorbed with his toys to answer the phone, had also spent a safer morning because of Underwriters' Laboratories. Scientists there had kept his boyish enthusiasm for electrical gadgets from turning into a dangerous pastime. They had taken the same model toys, and had fooled around with them as carelessly as any youngster might . . . and enjoyed it, too. The listing of Underwriters' Laboratories wasn't given until these men felt they would trust the same toys in the hands of their own children.

Engineers in the laboratories had inspected dozens of samples of other items in the Green home to make sure they wouldn't catch fire, or cause electric shocks, or otherwise endanger life or property. They had looked over the

Fighting Fire

With this issue NSPE salutes a great team—the workers against needless and destructive fire. As you have noted on the inside front cover President Truman has proclaimed the week of October 9, 1949 as Fire Prevention Week. One of the largest and most important roles in the constant battle against fire—the great destroyer—is played by the engineering force of the nation. "Engineers Against Death" tells of the work of one important organization—The National Board of Fire Underwriters—and particularly of the engineering research which safeguards all of us. We are indebted to the Underwriters for the pictures which illustrate the research work at Underwriters' Laboratories, Inc., and the graphic message on the back cover.

toaster, the fan, the electric wires, the fuses, and countless other pieces of electrical equipment. They had also tested the wax used on the floor to make certain that it wouldn't be dangerously slippery, and the roofing material to be sure that it wouldn't catch fire from flying sparks or fire brands.

Underwriters' Laboratories didn't manufacture any of these products, or have any interest in their sale. Engineers there were chiefly interested in one question: Is this product safe? If so, it could be listed. If not, no amount of money would purchase U.L. acceptance.

The organization is run on a strictly non-profit basis. Any manufacturer who wishes can send devices to the Chicago, New York, or San Francisco laboratories to be tested. He pays the cost of running the tests on his products, including his share of salaries and overhead. And he pays the same amount whether his product passes the tests or not—the laboratories have no financial interest in the outcome.

Sometimes manufacturers bring in early designs of a device to discover just what needs to be done to make it safe and to obtain the Underwriters' Laboratories listing. Nearly half of all products tested fail to measure up to the high standards the first time. Many of these are improved by the manufacturer until considered safe by the engineers. More than 375,000 products have been found acceptable for listing.

Ingenious Devices

The laboratories contain many ingenious devices specially designed to carry out various tests. There is a tireless machine which twists electric iron cords 3000 times to be sure they won't become dangerously worn through ordinary home use. Another pulls electrically-heated blankets back and forth over a framework thousands of times to make certain they won't short-circuit regardless of how restless the sleeper may be.

Ordinary electric plugs are attached to a revolving arm and then thrown against a hard-surfaced wall 500 times. If a crack appears, the plug cannot be listed.

Employees sometimes refer to the laboratories as "the only place in the world where it pays to play with fire." To discover whether a certain roofing material will catch fire from sparks reaching it from another burning dwelling, engineers construct a

(*Continued on Page* 22)

A metal frame, wired-glass fire window is under test at the Laboratories. Windows are built into a wall as they would be in actual construction and this wall forms the face of a large vertical gas-fired furnace. Gas ports in the furnace wall bathe the inside surface of the sample in flame, the temperatures being controlled under a standard rate-of-rise temperature curve.

An engineer uses a gas torch to melt the fuse and set off an automatic sprinkler installed on water piping in the sprinkler-distribution room at Underwriters' Laboratories. This test is made to determine how uniformly sprinklers of different designs will distribute water over walls, ceiling, and floor at different water pressures.

An Engineer Gazes In His Crystal Ball

BY W. R. GLIDDEN
Engineer of Bridges
Virginia Department of Highways

In one of his sonnets, Shakespeare wrote:

"Many a glorious morning have I seen
Flatter the mountain tops with sovereign eye,
Kissing with golden face the meadows green,
Gilding pale streams with heavenly alchemy.—"

What has our civilization done to this lovely picture? Mankind has denuded mountain tops of their verdure and cut ugly gashes in their sides, has turned green meadows into junk yards filled with ashes, trash and rusty automobile bodies, and has vitiated the pale streams with his noxious pollutions.

Of all forms of animal life which inhabit this planet, man is unique in being the only species endowed with conceit. He thinks his earth is the center of the universe, and that it, the solar system and all the great galaxies in the firmament are his exclusive possession and created especially for his own exclusive delectation.

An exterior, detached intelligence might consider that human life is a pernicious pestilence which should be exterminated, resulting in a better and more beautiful world.

Most of us think that much of this human life is noble and elegant and that these attributes are enhanced with the advance of civilization. Assuming that this postulate is correct, let us don the reliable mantle of the past and glance into this crystal ball of the future.

Look Into History

The final repository of all experience is history, and new experience in its turn becomes history. Science is systematized knowledge, and engineering is the application of this knowledge to the use and benefit of mankind. The accumulation of this knowledge becomes history, and every branch of science and engineering has its own distinct record of past events and discoveries. It is a truism that like causes produce like effects.

Given a set of conditions or sequence of events, it is possible to predict trends and consequences based upon past experience. The accuracy of these predictions depends upon the accuracy of the antecedents, and inquiry into variations from results anticipated develops new discovery and adds to the sum total of our knowledge. It is therefore necessary before venturing a prediction that we possess a thorough comprehension of existing data and the possible influence of modifying conditions: our knowledge of the historical evidence must be complete.

On our journey into the darkness of the future, into the mysteries of the unknown, history and the proven experience of science are the headlamps that light the road ahead, the road that we must travel.

The idea of progress, the idea of unlimited advance is a comparatively new concept. We of our times have become so accustomed to the expectation that the future will surpass the present and the past that we overlook the fact that prior to the industrial revolution, and the beginning of modern science, the world was static, that adherence to ancient methods, ideas and thought processes was the accepted and generally unquestioned mode of existence. Those few who did question it were made uncomfortable; they are the martyrs to science and progress.

Progress is measured by the creation of new wealth, tangible and intangible, the wealth of durable goods, the abundance of consumer goods and the dissemination of culture to enrich the minds and well being of all mankind. It results from universal effort, and is most effective when directed to channels of ever increasing number rather than being confined to the worn, hard-beaten paths of yesterday. If all of us follow the same occupation and apply ourselves assiduously to our tasks, we will produce an enormous amount of goods, the same goods, but does this mean progress? If some of us engage in the production of new kinds of goods or in the development of more efficient methods in the production of familiar but necessary goods, we will then really progress, and the creation of new wealth will be greatly enhanced.

I have heard it stated by well-intentioned people who should know better, that the ideal social order is that of certain collectivist insect species. Now insects are well adapted by nature for life on this planet, and may eventually, so some say, survive humanity, humanity which requires so much that is artificial and extraneous for its existence and well being. For thousands of centuries mutations in insect forms have been almost imperceptible.

There has been no progress or improvement in their condition except that imposed by nature through the process of natural selection to meet changing environment. The greatest joy in human existence is anticipation of improved conditions and changes for the better, or what is commonly known to Americans as the pursuit of happiness. What chance then is there for happiness in a fixed social order such as that which communism or some other egalitarian political system would enforce upon us? We might as well be termites, and live in the dark. To create increased wealth and happiness, men must be different and have divergent abilities. The accent should be on quality, not equality.

Basis For Progress

It should be quite evident that the greatest progress is made by peoples whose individuals show greatest differences in lines of ability. As we advance into the future, conditions are encountered which are entirely unrelated to recorded historical events and which cannot be anticipated by the keenest intellects. Decisions must be governed by chance, whose influence widens as the historical period lengthens. Since the probability of success in any play of chance increases with the number of trials, the more varied the trials become, the more rapid will progress be made.

The inflexibility of all systems of centralized control inhibits the necessary variety of means to cope with a mode of action whose consequences are unpredictable. A single decision is adopted, and because of the laws of chance it is likely to be wrong. By way

of clarification it may be well to remember that under the rules of chance, if there are two choices of action one will be right half of the time, and the chance that the right choice will be made is in inverse proportion to the number of choices available, which is usually more than two. Thus, if there are six different choices, the probability is 1/6th.

Centralized control is not confined to authoritarian forms of government. The necessity for making decisions confronts democratic government as well. Under democracy the majority, or a highly organized minority under the guise of a majority, rules. However that may be, there is only one element in power, and where chance becomes the predominant factor, this element, whether a majority or otherwise, is predestined to be wrong most of the time.

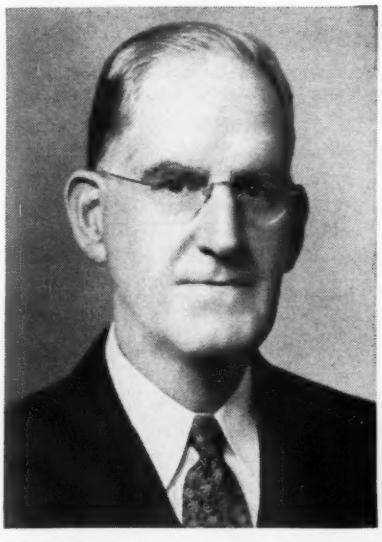
There is probably less government under majority rule than under more concentrated forms. Certainly, history tends to demonstrate most progress under an intelligent majority. Therefore, since progress is in inverse proportion to the extent of governmental control, we are led to the inevitable conclusion that the greatest progress would be made where rule is eliminated altogether. This reductio ad adsurdum is stating the extreme; there are of course certain well-recognized and necessary functions of government. But it has been well said that those people are best governed who are least governed. Unfortunately, effective self-government can be achieved only by those peoples whose individuals possess highest character and moral stamina.

Almost any form of government will succeed with an honest and intelligent citizenship. No government can long succeed, however exalted in conception, when its people individually or in organized pressure groups are selfish, dishonest and ignorant. From time to time we have seen the collapse of good government in many of our cities, and in some of our states, and the debilitating trend of the last two decades in our national domestic affairs has been a matter of great concern to many of our thinking people. Until we have good people we will not have good government.

In primitive times, bridge building was done by cut and try methods and there were many failures. There are numerous records in the history of bridge engineering of attempted construction overtaken by disaster several times before a permanent structure rewarded the efforts of the builders. Today, bridge failures are so rare that when they do occur they make news of spectacular importance. In modern times, failures can be attributed to insufficient funds to do the job properly, and a willingness of those responsible for policy to accept calculated risks. The most spectacular failures in recent years have been or could have been predicted from the accumulated knowledge of bridge design available at the time of construction.

The development of bridge engineering to its present high state of perfection illustrates what can be done under no rule at all. The discovery and utilization of the basic mathematical and physical laws and processes have been entirely independent of governmental regulation. In science and engineering, only the laws of nature govern. In contrast with the fiat of government, nature's laws compel absolute obedience.

Meet the Author



Civil Engineer, MIT graduate, highway and bridge engineer, lecturer, registered professional engineer in Virginia, teacher, active in many engineering societies and in church work—these are a few of the highlights of the busy career of William R. Glidden.

He is a director of the Virginia Society of Professional Engineers and active in the American Association of State Highway Officials, American Railway Engineering Association, American Society of Civil Engineers, and American Concrete Institute.

The Virginian's interests outside of engineering and church work run to fine music, ancient and current history, and a particular interest in young engineers.

What is true in science and engineering is true in all lines of human endeavor: progress is greatest when least hampered by regulation: discovery and advance are accelerated where there is greatest diversity of activity.

History Tells Story

Students of history agree that the most important civilizations were those whose people displayed superior ability and the development of these civilizations has contributed to the greatest advances in knowledge and culture. A great historian, W. M. F. Petrie, expounds that human ability has greatly fluctuated in wide historical periods. He divides seven milleniums of Mediterranean history into eight periods. Each period begins with a foreign invasion.

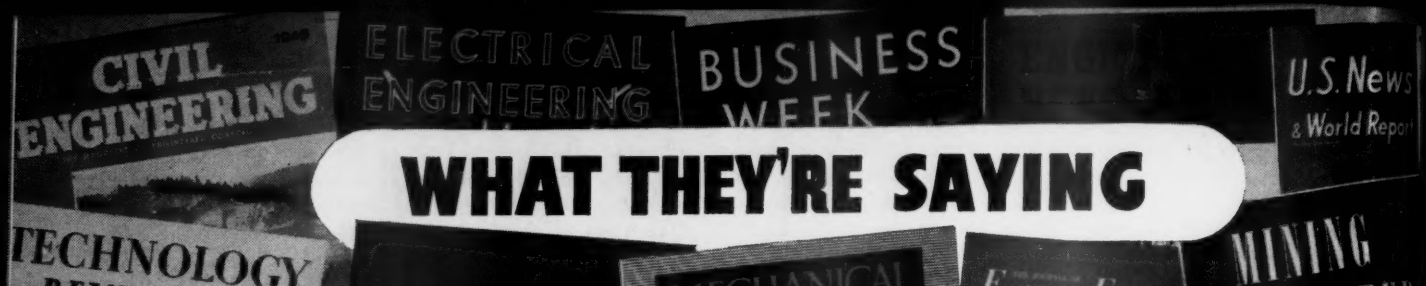
This is followed by a period of assimilation through six to eight centuries. Then follows rapid development culminating successively in sculpture, painting, language, technique, and finally in wealth. Wealth induces a period of luxury and consequent decay which continues until the old race becomes "too weak to initiate anything, when a fresh race comes in, and utilizes the old stock to graft on both in blood and culture. As soon as the mixture is well started it grows on the old soil, and produces a new wave of civilization."

According to Petrie, Western civilization, which includes the United States, is in the period which began with the fall of the Roman Empire. We have passed the peak in the fine arts, literature and great music and are now making stupendous advances in science. This will rapidly bring us into the next and final forward state which is that of great wealth. After this according to the cycles of Mediterranean history, we may then expect the great decline. This is a very gloomy prospect.

We have observed, however, that in evaluating effects from a given set of causes there may be some modifying influences not found in the original conditions.

If we had no additional historical or other evidence upon which to base a conclusion, we would be compelled to accept the idea of another great decline as inevitable. Happily, the laws of cause and effect may be applied to historical events and their influence upon forecasting the future just as they are applied to discovery and advances in science and in engineering.

(*Continued on Page* 20)



WHAT THEY'RE SAYING

. . . On Industrial Age Contributions

"What contributions can the engineer make to a better world? If given the opportunity, he can raise the standard of living for all of the people of the earth . . . If the engineers and the scientists are given the opportunity to extend the advantages of our industrial age to other nations, they will make great and perhaps the most important of all contributions to enduring peace throughout the world."

That is the inspiring conclusion of the review of "Contribution of Engineers to an Industrial Age," by Alfred H. White, Emeritus Professor of Chemical Engineering, University of Michigan.

Professor White relates the great material advances from the date of James Watt's steam engine to the atom bomb and stresses the engineering aspects of this tremendous development. The time has long passed since a so-called "pure" scientist is reported to have said, "Here is one discovery which, thank God, can never be prostituted to any useful purpose." The receptive attitude of American industrialists to new technical advances is in striking contrast to the European worship of tradition.

One of the greatest engineering contributions has been the elimination of exhausting hours of labor. The present day also sees abundant recognition of the engineer in the business, educational, and governmental fields, as well as in the technical field. This development too, is a long cry from the feeling of a generation ago that engineers were mere technicians and could not be expected to achieve executive positions.

Professor White salutes the part played by our engineering schools and from his wealth of experience—contact with engineering students for 60 years—he says he should attach a good deal of importance to students' interests in ideas as compared to their interests in people. The greatest problem before the engineering schools today is not the training of the research man, but the guidance of the larger group whose important work will be with people.

The need for engineering education to include history, literature, philosophy, psychology, and sociology is part of the problem of providing technical knowledge and the humanities in four or even five years. Commencement should not mean the end of formal education, Professor White says. It should take on its larger meaning of the beginning of life's work. He suggests a better term than "commencement" might be "progression." The college course is merely an intermediate step and not the final plateau of a man's education.

(From Diamond Jubilee Issue, Engineering Experiment Station News, June, 1949)

. . . On Engineering Aid to Medical Research

The medical profession needs the assistance of engineers in meeting problems of a nonmedical nature but very few engineers are aware of the opportunity for such a contribution to another important profession and do not know how to go about offering assistance.

A recent New York meeting explored this subject and heard Admiral Luis de Florez, president, de Florez Engineering Company, Inc., New York, outline the fields in which engineers can participate. Medical representatives of Cornell Medical Center participated and the two professional groups exchanged suggestions. Admiral de Florez said engineers are poor in everything but technical know-how and the will to contribute their time and talent to medical investigation if they but know what is required of them and how to get started.

Dr. C. P. Rhoads, director of the Sloan-Kettering Institute for Cancer Research said medical research was constantly increasing in complexity and needed aid from engineers in attacking nonmedical problems of an engineering nature. Cooperation and an exchange of experiences can give rise to important ideas, Dr. Rhoads said.

From the discussion it was observed that primary engineering contributions could be in the fields of research tools and methods. An exhibition of mechanical and electrical equipment illustrated the great field open to engineers.

(From August, Mechanical Engineering)

. . . On Engineering in England

What professional interests do U. S. professional engineers have in common with the professional engineers of England? Quite a few it seems from the remarks of Mr. E. S. Waddington, President of The Society of Engineers. This English organization is now 95 years old and holds a high place in English engineering circles. Their new President, Mr. Waddington, analyzes the growth of the engineering profession and their organizational development.

The decline in the status of engineers has probably been brought about by a number of factors such as the tendency to specialization on the part of institutions and societies, he says. "It is to be regretted that his status and position in this country is not officially recognized in the same way as that of doctors, lawyers and architects."

Mr. Waddington discusses such familiar problems as the meaning of the word, "engineer," and he recommends consideration of the U. S. system of registration. In view of the great contributions of the engineering profession it is rightly entitled to definite status in the community. More activity in the international field through UNESCO is indicated as desirable.

There is a modern tendency to give

insufficient training to prospective engineers, especially in the field of practical training. An interesting observation is that despite the engineering contributions to the recent war few, if any, of the principal executives of the various boards of nationalized industries, or in many cases, those of private enterprise, have been drawn from the engineering profession.

(From April, Journal of The Society of Engineers)

. . . On Engineering Government Efficiency

Where does the engineer fit into the tremendous job of untangling the complexities of government? One example is in the work of Robert Heller & Associates, Inc., management consulting engineers of Cleveland, Ohio.

The firm will survey the entire military establishment with the aim of putting the operation on a business basis. This work is discussed in "Untangling the Pentagon," which describes the headaches obstructing efficient government. Other management engineering firms have done similar work for federal agencies and it all ties in with the Hoover Commission report and recommendations.

Probably 10 percent of all management engineering work is with government today, federal, state, and local. Why do so many businesses feel the need for management consultants? "For the same reason, in a sense, that you need an architect to help you build a house," the article says. "By the same token, a management consulting firm is an expert in planning efficient administrative operation."

(From August 27th, Business Week)

. . . On Human Resourcefulness

Outstanding fact in our American economic development has been our ever-increasing use of minerals. The rise in our standard of living in the past century is without equal in human history. Nowhere in time or place has the man who works lived so well, or the man who cannot work been so well cared for.

Max W. Ball, a consultant at Washington, D. C., declares that the new world in which we live—one of which our forbears of 1949 could not even have dreamed—has come mainly from use of minerals. Per capita use of minerals has risen far faster than that of non-minerals—each American uses 2½ times as much steel and 16½ times as much petroleum as our fathers did in 1900, and the overall per capita consumption of all minerals has probably risen by 200 to 250%.

In the article, "Human Resourcefulness Key to Mineral Supplies," Ball declares that without enough minerals, the upward road of America's standard of living may end and life as we know it in the United States may end with it. How then do we stand for minerals?

We have been using them faster and faster since man chipped his first flint. Probably we have used more in a century than in the uncounted thousands of preceding years. We are using some minerals faster than we are finding them. Before long, perhaps, we shall have exhausted the easy sources of some minerals we now call irreplaceable. I see the end for some of our resources, but I see no end to man's resourcefulness. We shall be poor, spiritless creatures if we do not replace the scarce with the plentiful when the need comes.

Technique we may take for granted; one man or group may miss it but some other will find it, when the need is great enough. The basic requirement is energy. With enough energy, cheap enough to use, our supply of metals is almost limitless. About 83 per cent of our potential water power is still undeveloped—roughly 58,000,000 horsepower out of 70,000,000. Of coal we have plenty for a long time to come. We have plenty of natural gas for present markets, if we could get it to them. We have been finding it faster than we have been using it. Crude oil production in the United States is increasing. We are producing more oil than we have ever produced, but we are producing a little less than we are using.

We shall turn increasingly to the development of synthetic fuels. Petroleum products can be made from natural gas, oil shale and coal. By the time man really needs a new source of energy, huge, cheap and adaptable—he will have atomic energy in his hand, ready to use as he will.

(From July Mining Engineering)

. . . On Registration Values

Registration certificates are highly prized hall-marks that not only certify the registrants, but also inform the public that the holder has the education, experience and skill necessary to qualify as a professional engineer.

. . . the majority of engineers have become convinced after years of study and observation that professional registration is a tangible means whereby the public can be informed of engineers who are qualified to assume professional engineering responsibilities.

Professional engineering is a long journey, but for those qualified for the life, a happy one.

Those are the conclusions stated by R. W. Sorensen, head of the department of electrical engineering at California Institute of Technology, and A. H. Lovell, chairman of the electrical engineering department at the University of Michigan, in "Registered Professional Engineers." The article is a primer for non-registrants, explaining the whys and wherefores of engineering registration and how it can benefit the engineer.

Professional engineers, to be successful, like successful men in other professions must love their profession above all other forms of business activity and be endowed by these God-given talents: an ambition for hard work, a mind that thinks in the languages of mathematics and science and a desire to serve their fellowmen.

(From August Electrical Engineering)

. . . On Professional Attributes

Wherever there has been a knowledge of science there has been a professional attitude and a professional spirit. N. W. Dougherty, Dean of Engineering, University of Tennessee, lists the findings of the Committee on Professional Recognition of ECPD of attributes of a profession and a professional practitioner. They are: satisfaction of a social need, use of discretion and judgment, and intellectual activity, group consciousness, and legal status. For the practitioner the qualities may be stated as: a service motive, ethics or a code of conduct, a relation of confidence, and group responsibility.

Teachers must be aware of the tendency to compartmentalize, which is too common in American education today. He draws upon the principles of science to illustrate the code of ethics of a professional practitioner. Dean Dougherty finds similarities and complementing qualities between science and ethics in such fields as kindliness and consideration, humility, relation of confidence, judgment, cooperation, and integrity.

(*Continued on Page* 17)

Inter-Society Conference Discusses Student Chapters

The functioning of various groups of engineering students on the campuses of our universities and their relationship with existing societies was the subject of an Inter-Society Conference recently held in New York City.

Nine of the major engineering societies participated in the conference. Colonel E. R. Needles, president of the American Road Builders Association and chairman of the Committee on Inter-Society Cooperation of the American Society of Civil Engineers, served as moderator of the conference. The societies participating in the discussion were the:

American Institute of Chemical Engineers
American Institute of Electrical Engineers
American Institute of Mining and Metallurgical Engineers
American Road Builders Association
American Society of Civil Engineers
American Society of Mechanical Engineers
Institute of Radio Engineers
National Society of Professional Engineers
Society of Automotive Engineers

It was recognized at the outset that this first meeting was merely exploratory in nature and the majority of the time was consumed in discussing the activities of existing student organizations. Time did not permit the discussion of several other items on the agenda but it is expected that later meetings will develop more extensively other items on the agenda such as:

Discussion of activities which might be added profitably to the programs of engineering student groups.

Comparison of ways and means for adding such new activities to programs of student groups.

Discussion of the number and character of the student groups in each school which can most effectively and appropriately serve the students and the profession without duplication and confusion to the student.

Discussion of possible ways in which student groups may receive joint and effective sponsorship and support from the appropriate professional societies.

Van Praag Speaks

Considerable discussion revolved about the desirability of student chapters of the professional societies. Past President Alex Van Praag, Jr., the NSPE representative to the meeting, pointed out the current status of work of the national and state societies of professional engineers with various student groups in the promotion of professional concepts. He pointed out that the policy, as adopted by the Board of Directors of the National Society of Professional Engineers, was that every effort should be made to promote professional consciousness among students but that the specific means of implementing such efforts should be left to the development of the state societies as their various committees on education work with their local universities and faculties. It was also pointed out that there is no provision for student membership in the National Society of Professional Engineers, nor is it possible for a student group to affiliate with the National Society of Professional Engineers. The status of student work in each of the states in which there is an NSPE affiliated state society of professional engineers was available for such reference as might be desired.

Numerous Student Chapters

Several commented that it was unfortunate that so many student organizations were being developed on the campuses of our engineering colleges. All were in agreemnet that it would be hoped that through such cooperative conferences as this one, student organizations could be developed which would assure the student of maximum benefit by way of technical and professional progress and information. However, the current similar situation within the engineering profession itself made it apparent that it will be extremely difficult to resolve the student problem until the professional problem is likewise well on the road to solution.

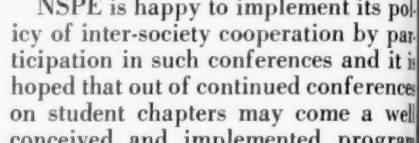
The conferees, however, were able to agree upon certain conclusions as the result of this first exploratory meeting and these conclusions lend emphasis to the need for further discussions of this kind.

Minutes of the conference and a report of these conclusions is now being drafted for review of the conferees. As soon as the report is available it will be reviewed in the AMERICAN ENGINEER.

Progress Noted

Following the conference, NSPE representative Van Praag stated that discussions of this kind indicate the need for greater understanding of the aims, objectives and activities of the organizations of the profession by all members of the profession. NSPE's past president said that it is heartening to note the progress being made toward greater appreciation of the approach of each society toward the common objectives of a greater profession.

NSPE is happy to implement its policy of inter-society cooperation by participation in such conferences and it is hoped that out of continued conferences on student chapters may come a well conceived and implemented program for student chapters in which adequate provision will be made for the inculcation of professional concepts in our engineering graduates, Van Praag stated.



West Virginia Society—October 14 & 15, Morgantown, annual convention.

Missouri Society—October 28 & 29, Cape Girardeau, annual convention.

Arkansas Society—November 1, Marion Hotel, Little Rock, annual meeting.

Florida Society — November 11, Sheraton-Plaza Hotel, Daytona Beach, annual meeting.

Indiana Society—December 3, Claypool Hotel, Indianapolis, annual meeting.

National Society of Professional Engineers — December 8, 9 & 10, Rice Hotel, Houston, Tex., 1949 annual meeting.

Texas Society—December 8, 9, & 10, Rice Hotel, Houston, annual meeting in conjunction with NSPE annual meeting.

Michigan Society—January 21, 1950, Michigan State College, Lansing, annual meeting.

California Society—January 20 & 21, 1950, Sacramento, annual meeting.

Illinois Society—January 26 & 27, 1950, Orlando Hotel, Decatur, Ill., annual meeting.

New York State Society—January 27 & 28, 1950, Hotel Rochester, Rochester, Winter meeting.

Wisconsin Society—January 27 & 28, 1950, Milwaukee, annual meeting.

Idaho Society—January 20 & 21, 1950, Boise, annual meeting.

Oklahoma Society—January 12 & 13, 1950, Tulsa, annual meeting.

Ohio Society — March 16, 17 & 18, 1950, Dayton, Ohio, annual meeting.

Connecticut Society — March, 1950, Bridgeport, Conn., annual meeting.

New Mexico Society—March 31 & April 1, 1950, Albuquerque, annual meeting.

New York State Society—May 4, 5 & 6, 1950, Statler Hotel, New York City, Mid-Century Convention and Engineering Industries Exposition.

New Editor Announced For American Engineer

The appointment of Kenneth E. Trombley as editor of the AMERICAN ENGINEER, and manager of public relations activities, has been announced by Paul H. Robbins, NSPE Executive Director.

Mr. Trombley, who joins the Society after several years with a Washington, D. C., trade association, succeeds Franklin F. Page who has become associated with the American Road Builders Association in Washington. Trombley is a native of South Dakota and attended South Dakota State College before going into the army in 1941. The next year he served as public relations officer of Camp Claiborne, Louisiana, and later as aide-de-camp for General John W. N. Schulz. He completed his military career by spending two years in England and France as a captain in the Corps of Engineers.

Immediately following the war, Mr. Trombley joined a Washington advertising agency as a copy writer and account executive. After a year with the agency, he went into trade association work in the public relations field.

Kenneth E. Trombley

Mr. Trombley is married and has a three-year-old daughter.

Carnegie Opens First Graduate School Of Industrial Administration

An important step in advanced engineering—administration has been inaugurated by Carnegie Institute of Technology. The nation's first graduate school of industrial administration was opened last month on an experimental basis.

Officially called the School of Industrial Administration, William Larimer Mellon, Founder, the school will seek to prepare men for ultimate management positions, primarily in industries where an understanding of modern technology is important. The graduate work of the School will be focused on:

1. Defining and handling problems.

2. Understanding and learning to use fundamental principles in the management engineering and economics fields.

3. Developing the integrity, character and social understanding that men must have for future leadership as managers and citizens.

As stated by the school administration, the obectives of the School of Administration are:

1. To habituate students in the orderly, "professional" handling of problems, with particular reference to problems in the industrial administration area. Specifically, this involves the ability (1) to recognize and define both familiar and unfamiliar problems; (2) to analyze the problems, making full use of previously acquired fundamental principles and available evidence; (3) to reach decisions on these bases; (4) to check decisions thoroughly before putting them into effect, and (5) to learn from these experiences principles and techniques which may be of help in solving future problems.
2. To teach thoroughly through repeated use by the student those fundamental principles and operational techniques in industrial administration and allied fields which will prove of maximum usefulness in dealing with the varied, and now largely unknown, problems which will confront the student in his professional career.
3. To teach that reasonable minimum of technical "know-how" which will equip the student to start in industry on a footing from which he can demonstrate his adaptability and professional aptitude for handling problems of ever-increasing difficulty. As part of this objective, to teach the student where to find basic information (facts and routine techniques) that he can learn for himself as required in his future work.
4. To give students the basis for dealing effectively with other people, as subordinate, equal, or superior, both in person and through written communication.

Assures Understanding

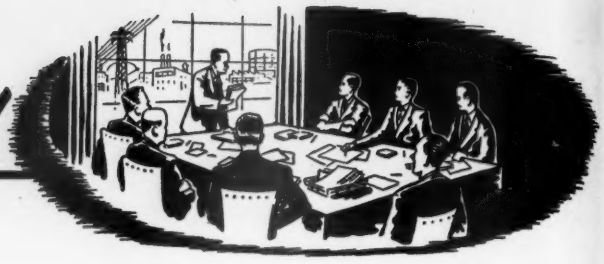
5. To assure a thorough understanding of the economic system and general social system in which the student lives and in which his business will operate. This objective is of major importance. It implies training for responsible citizenship as a major and integral part of training for a professional administrative career.
6. To encourage students to develop a set of personal and social values against which alternative courses of individual, group, and government behavior can be tested and judged as means to clearly recognize ends, and around which they can build a happy and useful personal life.

Classes in the new school will be seminar-type, with extensive student-faculty consultation on project work. The professors will use teaching methods based on those being developed in the Carnegie Plan of Professional Education. This plan is based on student participation to almost the same extent as professor participation. The students will attempt to solve a series of planned problems in the professional manner.

The school was founded in 1949 by a six-million-dollar gift to Carnegie from the W. L. and May T. Mellon Foundation. Dr. George Leland Bach, head of Carnegie's Economics Department, is acting Dean of the new school.

Industrialists have hailed the new school and its program. C. E. Wilson, President, General Motors Corporation, said, "For at least a half a century, education has talked of a professional man who can meet the stiff requirements of leadership in modern industry . . . I am convinced that time and a fair sampling of graduates will prove that the Carnegie Plan is the type of college program which can produce the professional men industry and America must have in greater numbers than in the past."

Accent on Activity



By CARL L. SVENSEN
Chairman, NSPE Registration Committee

It is particularly fitting that this issue of the American Engineer should carry an account of the activities of the National Society concerning its basic requirement for membership, namely, registration.

On November 10th, 11th, and 12th there will assemble in Daytona Beach, Florida, the members of the various registration boards of the 48 states to attend the annual meeting of the NCSBEE. Those of us who have been connected with the administration of registration laws have come to use these letters so frequently that we fail to realize that many members of the profession are not familiar with the National Council of State Boards of Engineering Examiners for which these letters stand.

For many years there has been close relationship and liaison between the professional engineering societies throughout the country and the NCSBEE. One of the principal objectives of the NCSBEE is the continuous improvement in administration of registration laws and the National Society of Professional Engineers is anxious to lend its support to these endeavors. As many members no doubt know, the National Society is extensively represented among the membership of the National Council of State Boards of Engineering Examiners. In many states the entire board of registration are members of the professional engineering society. The close coordination of the activities of the two organizations is of course a must and only as each supplement the work of the other can the full development of professional progress through registration be accomplished.

Definite Limitations

It is recognized in most states that there are definite limitations established by law on the activities in which the registration board can engage to make our registration laws the effective means for protecting the health, welfare and safety of the people for which they were enacted. Beyond this it is the responsibility of the profession and this can be accomplished as it is in so many states through the societies of professional engineers.

It is therefore fitting that at this time we salute the NCSBEE on the occasion of its 28th Annual Meeting and pledge our continued cooperation to the efforts which we mutually feel so beneficial.

As no doubt every member of NSPE knows, the national society has for some time had a committee charged with the responsibility of being alert to ways and means by which the professional engineers of the country can assist in the improvement both of registration laws and their administration. This committee is extremely important for no one is better aware of many of the problems being faced in this regard than are the members of the profession itself. Particularly aware of these problems, is the current registration committee. It has before it a number of broad studies on which it is seeking in cooperation with committees of the National Council of State Boards of Engineering Examiners and similar committees in our various states, the answers to these knotty problems.

Registration Problems

One such problem is the procedures and activities existing in the various states for the enforcement of our registration laws. These procedures vary greatly from state to state and the committee is studying these procedures carefully. It is heartening to note that the National Society has recently authorized the expenditure of considerable funds for the accumulation of information regarding enforcement into what is hoped will be a publication of considerable interest to the profession. This compendium on registration laws and their enforcement will include legal decisions which have been rendered pertaining to the engineering profession and has been compiled by a very active member of the national society in Ohio. It is expected that this material will be available for general distribution some time during 1950.

Those engineers who have had their work take them to various states will know the annoyances caused by the varying procedures for reciprocity. It is felt that by a complete study of the existing conditions for registration of engineers between states that the national society can perform a definite service to the profession through recommendations for greater ease in recognition of competent engineers between the states.

Another particularly perplexing problem is the development of adequate procedures for the registration of engineers of long experience and eminent capabilities. This problem of course ties in closely with the protection of those who have gone to considerable effort in meeting high standards and the careful administration of such provisions with prejudice toward none and with opportunity for those qualified.

Legal recognition of the engineer-in-training status has been accomplished in only a relatively few of the states. However, I believe most boards and most societies of professional engineers are discussing the desirability of providing this status in future amendments of their registration laws. The guidance of the national committee and the encouragement of such recognition is one of the major objectives of the current committee.

It is believed that most members have seen the publication of the National Society of Professional Engineers specifically prepared for the graduating students of our engineering colleges. This publication entitled "Next Step — Registration," has received wide distribution, some 25,000 having been given to engineering graduates this past year. This booklet tells in short form the advantages of registration, the procedures generally adopted and an indication of the growing trend for recognition of this advanced step of professional development. This publication is brought up to date each year and is serving well the young men of the profession.

NSPE Participates in Model Code Studies

Engineers who have worked in a number of municipalities. many times within the confines of one state, have decried for sometime the lack of uniformity in building codes, standards and requirements as recognized by various governmental units.

A committee of the American Standards Association has been devoting its entire efforts to a study of laws and ordinances pertaining to this subject and the development of model laws and ordinances for the guidance of governmental officials. NSPE has been participating in the studies of this committee and recently circulated widely to its member state societies the results of the first considerations of the committee's activities.

ASA Meeting

On October 11th, 12th, 13th and 14th the 31st Annual Meeting of the American Standards Association will be held at the Waldorf Astoria Hotel in New York City. Many engineers of course will be in attendance. While a considerable portion of the meeting will be devoted to other problems in which the American Standards Association is interested, many engineers will be discussing the work of one of the committees of ASA designated by them as Committee Z-56. This committee has as its objectives:

1. To study the problem of promoting throughout the country uniformity in technical requirements relating to health and safety as enforced by states and municipalities.

2. To propose standards for laws and ordinances whereby acceptable methods are invited for the adoption and use in nationally recognized codes and standards.

This committee has not limited its discussions to the members of the American Standards Association, but has requested the cooperation of some 34 other agencies, among them the National Society of Professional Engineers. The committee began its work about a year ago with a meeting in New York City at which time several leaders in the field of civic development, housing and home finance, and municipal affairs presented papers on aspects of the problem. These papers covered such subjects as the:

Economic effect of lack of acceptance of nationally recognized codes and standards;

Effects on the general public on public and private building agencies and on the home owner of the lack of acceptance of nationally recognized codes and standards;

Municipal adoption of codes by reference;

The constitutional and legal problems surrounding the use of national codes and standards by states and municipalities, and other similar items of discussion.

These papers together with a number of pertinent items in an appendix have been published by the American Standards Association and should be must reading for all engineers concerning themselves with municipal code authorities. Not only do these papers present in concise form many of the problems existing in this field but they point up very clearly the difficulties of improving the situation. It is toward this end that the ASA committee on model laws and ordinances is working. It is to be noted from the papers given that one of the greatest difficulties arises from the necessity for revising existing statutes or incorporating into law the model laws or ordinances which may be developed. The committee feels that the solution to this particular problem can be met in one of three ways:

1. Setting forth the code or standard in its entirety in a statute or ordinance.

2. Adoption of nationally recognized codes by reference and thereby incorporating it into a statute or ordinance.

3. Enacting a requirement that citizens must meet a legally sufficient common law standard of duty, accompanying this with a provision that compliance with a particular national code or standard will be prima facie evidence of satisfaction of the common law duty.

Public Protection

Professional engineers of course have a very vital interest in the promulgation of appropriate laws and ordinances pertaining to the health and safety of the citizenry of our country. They are not only interested because these laws will govern and vitally affect much of the construction for which they are responsible, but also as citizens they are interested in seeing that these laws permit the most economical construction coincident with assurances of safety and strength.

Cleveland Shows Value of Education

A little education, it seems, goes a long, long way.

And the Cleveland (Ohio) Chapter cites the case of a recent report of the highway committee of the Cleveland Regional Association as proof.

The Ohio community realized long ago the need for and wisdom of express highways in the greater Cleveland area. With the end of the war, it looked like construction of the highways would swing into high gear. Seven radial freeways, two belt freeways linking the radials downtown at the periphery, a cross-town freeway, parkways and bridges were envisioned in the ten to 20-year program costing an estimated 240 millions in 1944 dollars. Savings in gas consumption, mileage and time and reduction of accidents offered a total of economies far above that cost.

But the program bogged down, and a survey indicated to the Regional Association that if the present annual rate is maintained, it would take 59 years to complete the freeway system. Immediate question was "How come?" For that answer, the CRA turned to the Cleveland Chapter, which immediately pointed to the failure to make detailed plans and to complete agreements for a number of the essential links in the freeway system.

What had caused that failure? A shortage of engineers. And why the shortage? The chapter suggested it might be a problem of salaries, at least that was a point to start. The committee took a look at the recommended salary schedule of the Ohio Society, held up the salaries offered engineers responsible for the freeway program and found only one agency out of the five meeting salary standards. That was all the CRA needed.

"It is easy to see why our public engineering agencies are under-staffed," it said in a special bulletin. "Salaries offered by our public agencies are simply too low to attract as many trained men as are needed to perform the tasks at hand. In this period of intense activity in the construction field, engineering ability is at a premium. Trained men will continue to seek employment in higher paying fields. It is obvious that the only way to secure the number of trained engineers needed to carry forward the express highway program at an acceptable pace is to increase salaries in the public agencies.

A Glimpse of Old Mexico

Old Mexico To Be Seen By Convention Tourists

An exceptional opportunity is offered to members of our Society to visit Old Mexico and see some of the most interesting and scenic places on a Post-Convention tour which has been especially arranged for our members by the United States Travel Agency, Inc. of Washington, D. C., following our convention to be held in Houston in December.

This trip, in addition to including the best of Mexico, will afford members a chance to take their families to Mexico at the height of the fiesta season in that country as well as an opportunity to enjoy doing some of their pre-Christmas shopping in this beautiful country just south of the Rio Grande River.

Brochures covering this post-convention trip in every detail are available for distribution and any members interested in making this trip to Mexico can secure full information and a copy of the brochure by writing United States Travel Agency, Inc., 807 15th St., N. W., Washington, D. C., attention of Mr. Ralph L. Preble, Convention Manager.

The complete itinerary for this post-convention tour will be included in your next issue of AMERICAN ENGINEER.

Write for your copy of the brochure and plan to be with the group who will enjoy this post-convention tour to Old Mexico.

Registration Act Amended In Ohio

Futher security of their professional status was granted the engineers of Ohio recently when Governor Frank J. Lausche signed OSPE-sponsored legislation to amend the registration law.

The amendments to five sections of the General Code make the Enginers and Surveyors Registration Act more specific. Like the Medical Practice Act, Pharmacy Law, and the Dental Law, the Registration Act now stipulates subjects in which the board shall examine all applicants.

Previously the Registration Act stated that the scope of the examination shall be prescribed by the board. This has been questionable since some three years ago when the Illinois court held that a similar provision in the Illinois law was unconstitutional because it delegated legislative power to the board.

For purposes of clarification, the term "professional engineer" as used in the act was changed to read "shall mean any person who has been registered as herein provided." The definition of the "practice of engineering" was also revised by deleting the words "wherein the public welfare, or the safeguarding of life, public health or property is concerned or involved when such professional service requires the application of engineering principles and data." The new wording is "in the proper rendering of which the qualifications of section 1083-13 of the General Code are required to protect public health, safety and property." This amendment puts engineering practice on the level of examination and registration rather than "application of engineering principles and data."

It further clarifies the fact that it is unlawful for anyone to convey the impression that he is an engineer unless he is registered.

Although two Attorney-Generals of Ohio held this opinion, much misunderstanding and confusion resulted in the past by persons thinking they could call themselves civil engineers or even consulting engineers so long as they did not claim to be "professional engineers."

Accordingly, by eliminating the word "professional," the change reads in part "tending to convey the impression that he is an engineer," thus dispelling the misconception that a new kind of engineer, namely "professional engineer" had been created. The term "professional engineer" is still used in the act and means one who "has been registered as herein provided."

Instead of leaving complete power in the hands of the board to determine what "an approved course in enginnering" and a "recognized college of engineering" are, the act was amended to read, "For the purposes of this act an approved course in engineering shall be one the credits for which are offered by a college or university approved by the North Central Association of Colleges and Universities at full value" and a "recognized college of engineering shall mean any college or university offering an approved course in engineering."

Two obsolete clauses were deleted. The first was the "grandfather's clause" which provided for registration by exemption from college education or examination for a period of 18 months after the act was passed in 1933. The second was the "eminence clause" which provided for the registration of "eminent" engineers by exemption for a period of five years after the effective date of the act.

Program to Rebuild European Libraries

An outgrowth of the recent UNESCO conference at Cleveland, at which NSPE was represented by Dr. Hale Sutherland, Bethlehem, Pa., is a program to rebuild the devastated libraries of Europe. The program is being conducted by Cooperative for American Remittances to Europe, Inc. (CARE), with the cooperation of UNESCO, the Library of Congress, the American Library Association, and other interested organizations.

CARE will obtain new books on scientific and professional subjects at publishers' list price and send them to selected European libraries. Included in the list are books on planning, sanitary engineering, engineering, chemistry, geology, agriculture, health and welfare.

Minnesota's Thompson Calls For Strong Program

"What kind or what degree of Professional Recognition can we get, do we want and are we willing to pay for?"

That is the question posed by Minnesota Association's President, T. S. Thompson, in his annual report to the House of Delegates. The MAPE leader points out that the pattern of other professions is not necessarily the best for engineers and he says engineers should build their professional structure only after examining all the facts and determining what is best for humanity and the engineering profession.

Of all professions, engineering has the least opportunity to render personal service in the sense of the doctor's services. Likewise, in the field of civic participation, while engineers have an equal opportunity, they are the most poorly equipped for this both by temperament and by training. Engineers, as an employee group, cannot expect to equal private practitioners who are in business for themselves, consequently economic position as a factor for personal esteem is narrowed for the engineer.

Thompson says that an important part of professional recognition is that accorded to a group or accruing to the individual as a result of group action. Engineers have used team-work to a great extent and this factor can be utilized to their advantage in seeking professional recognition.

"High standards of education and practice, license laws, codes of ethics to protect the public, group responsibility and public relations programs are group activities that produce professional recognition and these must be carried on by strong and inclusive professional societies."

Engineering Weaknesses

The Minnesota prexy tabulated to the House of Delegates some of the disadvantages or weaknesses inherent in engineers and engineering, some of which are of the profession's own making. They are:

1. The basic material is difficult. Introverts go into engineering where they can occupy themselves with things and avoid people.
2. Engineers because of their need of a business medium to convert their services into useful forms, are predominantly employees and will continue so to be.
3. Engineering is the only major profession wherein the normal situation is one in which a third party makes a profit out of another's professional service.
4. A very large percentage of engineers have no personal contact with the public or with individuals outside of their own organizations, or their own small group.
5. Many of those who do have personal contacts are public employees and have two strikes against them at the start.
6. As engineers advance to higher positions, they go more and more into sales, executive and administrative work. While their engineering backgrounds are useful, they stop doing engineering work and very often line up with business management in their attitude toward other engineers.
7. Entrance to the profession has never been restricted by design or over long periods of time. War interfered. but the aftermath is resulting in large increases in the number of entrants. There are too many engineers, graduates and/or registered, who must do routine technical work at marginal wages because there are not enough better jobs to go around.
8. Many of our registration laws are weak and not on a par with those of other professions. They permit registration of individuals who by no stretch of imagination can ever aspire to the kind of recognition accorded other professions.

Accepted Methods

Eight steps, which he termed "proven instruments," were presented to the Minnesota group by Thompson as a basis for obtaining professional recognition. "Some of the accepted methods of getting recognition may be considered by engineers as too bothersome or even outright objectionable. Unless we can think of better ones, we had better use such proven ones as are adaptable to our needs." He listed the following:

1. Strong and inclusive professional organizations at local, state and national levels. Strong one-company negotiating groups where needed.
2. Stronger registration laws better enforced.
3. Improvement of the intake into the profession by such reasonable restrictions as better education and limitation of use of the title—"engineer."
4. Active participation by engineers in civic and cultural affairs and in party politics.
5. Better standards of practice.
6. Further improvement of our already good technical service.
7. Unity in the profession. Not only unity among the various branches, but a thorough understanding of group problems. Our consulting group for instance should not expect the employee - in - industry group to use only such devices to gain recognition as the former would use. The employee group must be more willing to work out its own problems rather than seeking ready-made solutions.
8. And last but by no means least, is an aggressive public relations program at all four levels, national, state, local and individual.

In Simple Language

To illustrate the pitfalls of scientific jargon for the layman, Dr. George R. Harrison, of MIT, tells this classic story as reported in the Washington *Star:*

A New York plumber of foreign extraction with a limited command of English wrote the National Bureau of Standards and said he found that hydrochloric acid quickly opened drainage pipes when they got clogged and asked if it was a good thing to use.

A Bureau scientist replied:

"The efficacy of hydrochloric acid is indisputable, but the corrosive residue is incompatible with metallic permanence."

The plumber wrote back thanking the Bureau for telling him the method was all right. The scientist was a little disturbed and showed the correspondence to his boss—another scientist. The latter wrote the plumber:

"We cannot assume responsibility for the production of toxic and noxious residue with hydrochloric acid and suggest you use an alternative procedure."

The plumber wrote back that he agreed with the Bureau—hydrochloric acid works fine. A top scientist—boss of the first two—broke the impasse by tearing himself loose from technical terminology and writing this letter:

"Don't use hydrochloric acid. It eats hell out of the pipes!"

Around The Nation With Our Members

Capital Chapter Honors Membership Chairman

For a job well done, Capital Chapter of the Illinois Society devoted its September 27th meeting to recognition of Harry H. Cordes, chairman, membership committee. Under the inspirational guidance of Cordes since January, 1948, the chapter doubled its membership, going from 81 members to 163 members. An NSPE emblem specially mounted on a gold tie clasp was presented to Cordes by President Al Frost.

The membership accomplishments visualized by Cordes push ahead under a "five-point" attack involving: The spotting and tabulation of a list of all eligible engineers, definitely assigning prospects to specific members familiar with the men to be approached, keeping a running record of the membership advance in a special committee page of the monthly "Capital Chapter Chatter," the preparation of special articles of reader interest on "professional necessity" in the Chapter's publication, and the promotion of refresher courses for professional engineering aspirants for registration. While the Illinois "fireball" wasn't busy he whipped out eight special articles, several of which have received state-wide publication in the state society magazine.

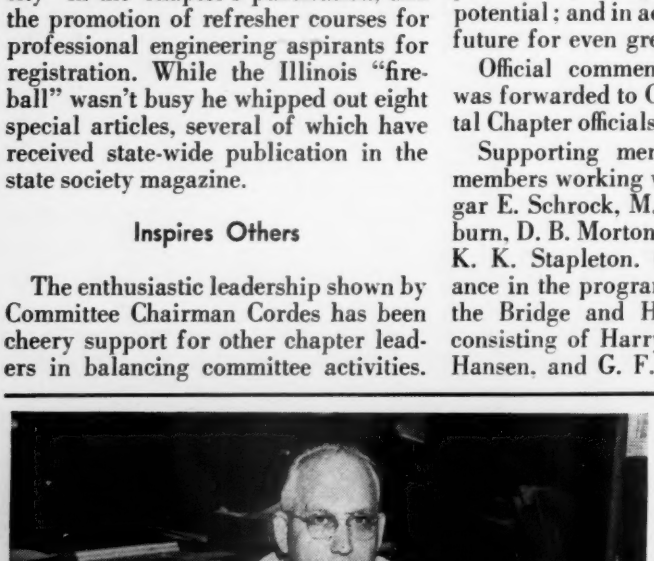
Inspires Others

The enthusiastic leadership shown by Committee Chairman Cordes has been cheery support for other chapter leaders in balancing committee activities. It has tremendously bolstered the chapter because the contagious "sales talk" has helped to point out again and again the value in affiliation with an organization devoted truly to professional betterment.

When Cordes accepted the arduous task of expanding the chapter membership, he found that it encompassed only 20 per cent of the potential membership. To date, the chapter possesses approximately 35 per cent of its total potential; and in addition it looks to the future for even greater growth.

Official commendation from NSPE was forwarded to Cordes through Capital Chapter officials.

Supporting membership committee members working with Cordes are: Edgar E. Schrock, M. R. Golly, L. F. Ryburn, D. B. Morton, J. W. De Brun, and K. K. Stapleton. Considerable assistance in the program was also given by the Bridge and Highway Committee, consisting of Harry P. Graham, R. W. Hansen, and G. F. Salles.



Meet Harry H. Cordes in a pose particularly appropriate for him—hard at work. He is the gentleman described in the accompanying story who has led Illinois' Capital Chapter to a 100% increase in membership.

Florida Presents Latest State Magazine

The latest state society to add a magazine to its service to members is the Florida Society of Professional Engineers. Other states with a budget problem and aspirations for a state magazine may profit by inspecting the modest but attractive Florida publication.

A well-designed printed cover and mimeographed inside pages is FSPE's answer to the money problem. The Florida Directors have been planning a magazine for more than a year and in announcing the first issue it is stated they decided to stop talking about it and simply go ahead and get one out.

The primary purpose of the magazine is to afford a medium for the use of the membership in expressing their opinions in the conduct of the affairs of FSPE, the first issue states, and not for the sole purpose of sending communications from the officers to the members.

Feature article in the first issue is President Joe Williamson's "The Need for Professional Consciousness." The FSPE leader makes such pertinent comments as: ". . . engineers in general are inexcusably ignorant of what true 'professionalism' really stands for . . . many illegal and unethical practices on the part of many engineers are perpetrated through ignorance . . . before society will respect the professional engineer we must first sell professional engineers on respecting one another . . . pessimistic attitude is incorrect . . ."

Other features of the first issue include a report of the Secretary-Treasurer and a report of the National Director.

Burgett on Board

Paul V. Burgett, Virginia, Minnesota, has been named by Governor Youngdahl to the state registration board. The new appointee is chief mining engineer of the Oliver Iron Mining Company and was endorsed for the position by District 8 of the Minnesota Association of Professional Engineers and the Engineers Club of Northern Minnesota.

Pennsylvania Schedules State President's Meet

Plans for scheduling of a state chapter president's conference, patterned after that held for state society presidents by NSPE each Spring, have been announced by Clarence Shoch, head of the Pennsylvania Society.

The conference has been scheduled for October 14 in or near Harrisburg. The following day, the chapter presidents would be invited to sit in with the PSPE executive board. A series of half-hour discussions on such subjects as membership, affiliates, programs, community activities, local-public-industrial-architectural relations, educational activities and improvements in functioning of the state headquarters are on the agenda for the presidents' meeting.

In issuing the call for the meeting, Shoch pointed out that since most trips to the conference would be by car, chapter secretaries and committee chairmen, including any state committee chairmen, could also be brought to the sessions to make most effective use of the interchange of information and experiences.

NSPE Members Contribute To Air Age

Two NSPE members are "mentioned prominently in the dispatches" from a West Coast airplane manufacturer for services "above and beyond the call" in putting aircraft to work in cutting travel time.

Named in a recent press release from Ryan Aeronautical Co., San Diego, Calif., are Paul T. Schweitzer, vice-president of Layne-Atlantic Co., Norfolk, Va., and Harding H. Thayer, New Castle, Pa., partner in the Thayer Co.

To prove the practicability of the Ryan Navion plane as a "valuable tool for engineers," the release cites a number of case histories of engineers and their firms which have put the single-engine, four-place craft on the payroll. Schweitzer is credited with logging as many as 165 hours flying time in 60 days while using his company's plane to develop and carry out well drilling commitments throughout the south Atlantic states. Supervising offices in five different states, he has put more than 700 hours and 98,000 miles on a Navion which Layne-Atlantic has owned only 18 months.

Thayer is credited with using his Navion to speed up inspection and contract negotiations. It's the second ship of that type his firm has owned.

Stanford Addresses Wichita Chapter

NSPE President Alan G. Stanford addresses a meeting of the Kansas Society of Professional Engineers at Wichita en route from the Board of Directors meeting at Denver. He was accompanied by NSPE Vice President L. L. Dresser. Outlining the aims of NSPE, President Stanford spoke of the decisions reached at the Directors' meeting and advised the Kansas group on how to make the society meaningful on the local level. Vice President Dresser told the Kansas engineers of activity in his neighboring state of Oklahoma in meeting problems similar to those existing in Kansas.

Pictured at the speakers' table, left to right: Walter G. Johnson, Vice President, KSPE; Rufus S. Kirk, Director, Wichita Chapter, KSPE; L. L. Dresser, NSPE Vice President; C. O. Schofield, Flood Control Engineer, Wichita; President Stanford; Oren L. Shelley, President, Wichita Chapter, KSPE; George F. Campbell, Secretary, Wichita Chapter, KSPE; and Guy M. Shelley, Jr., Treasurer, Wichita Chapter, KSPE.

Washington Set for Membership Contest

Washington Society of Professional Engineers warns its members to line up new prospects if they don't want to be left out. The big membership contest authorized by the Board of Trustees is all set and ready to go. The State Membership Committee will handle the details and there will be valuable prizes, plus a great deal of friendly rivalry, plus an "excellent opportunity to get acquainted with your fellow engineer non-members."

Stress Public Relations Stolte Tells Seattle

Every member of NSPE should consider public relations as his problem NSPE Vice President S. L. Stolte told the Seattle Chapter (Wash.) as he made a swing through the Pacific Northwest. Engineers as a group are far too modest concerning their accomplishments, Stolte said, and he outlined objectives and aspirations for the coming year.

Stolte was the honored dinner guest of the chapter at the Arctic Club and he took the opportunity of urging increased professional activity. He emphasized the considerable voice NSPE will have as it continues to expand in numbers and influence. The goal set by Stolte is 50,000 members by 1960 and this can be reached, he said, if every member will continue his active interest in the society as a whole and the growth of his particular chapter.

Chapter Studies Utilities

A comprehensive study of the utility service in Bryan has been made by Brazos (Tex.) Chapter at two meetings. City Engineer J. M. Orman detailed water and sewage systems at one meeting, outlining improvements now underway and plans for future expansion. And operation of the Bryan REA system was explained at the second such meeting.

Oklahoma Ready for EIT's

The state board of Oklahoma has completed the procedure for the registration of engineers-in-training, as provided in the revised registration law, C. V. Millikan, chairman of the board has announced. Application blanks, instruction sheets and copies of the revised law may be obtained by writing to the State Board of Registration for Professional Engineers, P. O. Box 1501, Oklahoma City 1.

Wisconsin Holds Summer Meet; Hears of "Iowa's Experiment"

A combination of society business, frolic, and report on engineering experiences in a neighboring state contributed to the highly successful third summer meeting of the Wisconsin Society of Professional Engineers, held at Green Bay.

C. Maxwell Stanley, president, Iowa Engineering Society, and president of the Stanley Engineering Company, Muscatine, Iowa, discussed "Iowa's Experiment," presenting the need for improved engineering organization in this country for two fundamental reasons. The first reason is enlightenment of self interest, he said, stressing the fact that all engineers agree that they do not get the proper recognition both professionally and economically. He pointed out that we could improve the professional status and economic conditions of the engineer in two ways:

1. Obtaining of a better and more unified engineering organization.

2. Rendering public service and convincing the public of professionalism by acting like professional men.

The second fundamental cited by the Iowa engineer was the obtaining of public recognition. The public fails to recognize that our way of life is based upon the "industrial civilization" that the engineer has built, he said. The mere handful of engineers in Congress is a striking illustration, he said, pointing out that many questions the legislators are called upon to solve are directly concerned with engineering principles.

The Iowa Society president told the Wisconsin group that better organization could be obtained in three ways:

1. Cooperation between existing societies.
2. Segregation of professional activities.
3. Unification of professional and technical aspects of engineering.

Grass Roots Experiment

"Iowa's Experiment," he pointed out, follows the third way of improving the engineering organization. The experiment is of a grass roots nature and started with two committees, unification, and extension of service on a local basis. Finding the groups working hand in hand, the plan is to organize or unify the local or regional clubs by affiliation of such clubs within the state with the state society, formation of new local groups, expansion of membership classifications and new members, changes in schedule of dues.

George A. Sievers, Chairman of WSPE's Ethics and Practice Committee, reported that the cooperaton-enforcement policy is producing results and that the committee's letters have been answered with requests for assistance in conducting businesses in accordance with the registration act. The committee has had 24 cases on its agenda this year, he reported, and he discussed several of these. Members of the society gave the committee a rising vote of thanks for the splendid work done this year.

"Scientific Selection of Engineering Personnel" was the subject presented by John Bullock, Administrative Assistant to the Director of Industrial Relations, Allis-Chalmers Manufacturing Company. He spoke on Allis-Chalmers' method of evaluating the technical, social, and personality qualifications of the applicant and of the job. The speaker told the audience that while they do not expect to find the round peg for the round hole they do try to find the peg which most closely fits the shape of the hole.

Stanford Speaks

Another highlight of the sessions was the address of NSPE President Alan G. Stanford who spoke on 'Our Expanding Professional Obligations." The NSPE prexy reviewed the obligations of the engineering profession which he tabulated as being to the public and society as a whole, to fellow practitioners, to non-professional but qualified engineers, to pre-professional and sub-professional persons, to engineering educators, to technical workers, to the profession, and to NSPE.

Other business on the crowded agenda included reports of the Legislative Committee, principally concerned with amendments to the registration act: Public Relations, Directory; Registration Promotion; Telephone Listings, Publications.

Fox River Valley Chapter was the genial host for the meeting and provided such diversified entertainment for the guests as accordion duet by Marion Henrickson and Mary Lou Hopkins, tap dances by Nancy Corby, ballet dance by Charlotte Meyers, skits by Ray Strenski and Bob Burckle, comedy songs by Mrs. Robert Delorit, director of the entertainment program. Bob Corby served nobly as emcee.

WSPE President Herbert Moore presided at the sessions and Dominic Olejniczak, Mayor of the City of Green Bay, brought greetings to the members. The meeting ended with the customary informal "Engineers' Dinner" with President Moore presiding and Ben G. Elliott acting as toastmaster. The program committee was headed by William E. Littleton, Wauwatosa.

In The Pictures

As seen through the camera of Bill Urban, Milwaukee, here are some of the highlights of the Wisconsin meeting:

1. Some are still eating, others smiling "pretty" at the camera, but all are having a good time at the "Engineers' Dinner."
2. This happy group consists of: left to right, front, Bob Connelly, Appleton; Phil Thern, Madison; and William Urban, Milwaukee; rear, J. R. Egan, Oshkosh; H. C. Trester, Oshkosh.
3. NSPE President Alan G. Stanford (left) is greeted by an old friend and Society stalwart, Dean M. O. Withey, University of Wisconsin.
4. Waiting for guides for tour through Nicolet Paper Mill Company. In the center of the group George Martin, Green Bay, chairman of the local arrangements committee, explains what will be seen on the tour.
5. The ladies appear to have had an enjoyable time as they disembark after the tour to "Cotton House" and along Bayshore.
6. Mrs. Alan G. Stanford, wife of the NSPE prexy, poses with Mrs. P. M. Thayer of Milwaukee, (right).

What They're Saying...

(*Continued from Page 7*)

"We think of science as cold hard facts rather than something which will appeal to emotions. This is true, but there is the urge to go farther, to climb higher, and to search for more knowledge; these are qualities needed by professional practitioners."

Professions require legal status and we usually think of science as having no law except observations and known facts. But scientists too must observe the laws of health and safety which are the basis of legal recognition of engineering professionals.

(From June, Journal of Engineering Education)

. . . On Human Values in Engineering

The president of the American Institute of Chemical Engineers, and vice president of Monsanto Chemical Company, Francis J. Curtis, says that the engineer as a man is more important than as an engineer. Despite the great material advances of the United States the questions remain as to our fullest possible utilization of skill and time. The structure built in the U. S. is staggering while it has toppled in the rest of the world. "Greatness lasts only in the spiritual."

With these basic thoughts Mr. Curtis develops the growing submergence of the individual in the state. We are too much concerned with economic security and too little with the spiritual. Many engineers know nothing of religion. An open mind would require that we look into it, he says.

Among the non-material reward the engineer should seek, the author lists; art and literature; music, "a field to which the engineer seems to lean; social service, which he says is the greatest outlet for social energy in the field roughly classified as social or civic service; and professional responsibility. The older generation have a duty to the youngster and the younger engineers can take plenty of help. While all the engineering societies are interested in this field there are few workers.

Ideals without work are nothing, Mr. Curtis says, and each man must in some way educate his successor. The college or university, though crucial is only a part. Many unfits are rushing into engineering now and the author says he would like to see education put on a drive to solve the moot question of aptitude testing.

(From Diamond Jubilee Issue, Engineering Experiment Station News, June, 1949)

. . . On Synchronizing Engineers

James F. Fairman, President of AIEE, has a series of interesting and important questions. Can engineers be synchronized? Can they be persuaded to pull together, to cooperate, to pool their talents and resources in an orderly, organized effort to attain common objectives outside their several fields of specialized technology?

Many believe it can be done but we must persist in our effort to find the right formula. Mr. Fairman reviews the past work and studies in the field of engineering organization and brings the record up to date. While seeking the goal we must not neglect the day to day problems. Rather than wait for the perfection of an over-all organization we must work together with our other engineering societies.

"Sometimes I wonder if we have put too much emphasis on the matter of organization on the assumption that if we could devise the right kind of organization all our problems would automatically be solved. Of course, this is not so." Our organizations are merely tools and we should modify them to meet new situations and scrap them when they are obsolete or worn out.

There is work to be done. Why not use the tools at hand, Mr. Fairman asks. He discusses various plans of organization of the profession which are: continuation of technical societies and a separate organization for professional matters; local engineering or technical societies councils; an overall engineering organization incorporating both technical groups and professional interests. Various combinations of these plans are also briefly discussed.

(From September, Electrical Engineering)

ASPE-Industry Adopts Student Relation Code

A code of ethics for interviewing and placement of college seniors has been adopted by the American Society for Engineering Education, following conferences between 48 representatives of industry and education.

Adoption of the code followed realization that the placement of graduates in the industries has become a major operation in the colleges and schools of engineering. In these operations, certain serious problems arose in the post-war years, largely because of the great shortage of engineers in the industries. It was to solve them that a special committee, under the direction of M. M. Boring of General Electric Co., was established to draft the code.

Briefly, the code provides:

1. Within two weeks after the student is interviewed, he will be notified by the company as to whether or not they are further interested in him. The individual company also will notify the student, in the event that he is being given serious consideration, within what period he can reasonably expect an offer of employment.

2. Industry should provide written material, lectures and other means of preparing the students for the interviews, of a type that will give them a real picture of that industry. This information should be filed with the placement office and not with the students. Also, the student should understand from the industry involved as to whether or not he will be expected to take psychological, aptitude or other tests before being accepted for a job. Such information should include reference to the signing of patent agreements, passing of physical examinations and other incidents to final acceptance.

3. Industry should understand that it cannot place the responsibility of pre-selecting students in the hands of faculty members unless adequate job descriptions are provided so that the faculty can have a sound basis for making such a pre-selection. It is recommended, however, that wherever possible, industry should be willing to discuss possible employment with any student who genuinely desires an interview.

4. It is recommended that wherever possible, industry continue to conduct interviews in lean as well as good years.

5. Plant visits arranged by industry should be made with a minimum of interference with classroom schedules, should be limited exclusively to discussions of the subject at hand and should discontinue overselling and elaborate entertainment of the student.

6. Industry should keep the placement offices fully advised as to its activity in interviewing.

In return for industry's acceptance of that code of ethics, the colleges agree to provide industries with lists indicating the approximate number of students who will be available for interviews during the school year; recommend that no restrictions be placed on the number of interviews a student can take, except that indiscriminate or general shopping around must be discouraged; agree to provide adequate physical facilities for the conducting of interviews and make their records available to industry when necessary for pre-selection.

Distribution Held Key To Stable U. S. Economy

There will be no stabilization of the American economy until industry matches its production and distribution expenditures dollar for dollar.

That's the declaration of an NSPE member who has made case studies of over 1,000 of the country's foremost manufacturing firms. He is Fenton B. Turck, Jr., president of Turck-Hill & Co., New York, and a member of the New York State Society.

"Industry has spent 23 billion dollars in plants and equipment in the last three years," Turck says. "Until we make a similar expenditure in our distribution systems, we cannot expect our new factories to be fully employed steadily. For every new plant and every new machine, there has to be a corresponding dollar investment in our distribution system.

Describing distribution as the "blind spot" of American economy, Turck said its importance is not generally appreciated even within companies whose very existence depends upon the continuous loyalty of its customers. Only a handful of companies have a head of distribution in their management family.

He has broken down the mass of distribution services into 47 separate parts, and his research has disclosed not a single company that has achieved a status of perfection in even a major number of those functions (all activities involved in progression of goods from producer to consumer, including warehousing, transportation, wholesale and retail marketing, advertising, and a substantial part of research, engineering, accounting and financing).

A Child is Born, Fathered by CSPE

The above headline comes from "Pappy" Earl N. Holm, better known as President of the California Society of Professional Engineers. He reports that "another child was born last night. The San Jose Chapter of CSPE was officially organized and you will soon have another group of members in California."

The West Coast NSPE Society is working on a large family with several other "children" definitely in the offing. "We are strong opponents of any form of birth control," Holm says.

Columbus Chapter Hosts

Reports from Georgia are that a good time was had by all at the summer meeting of the Georgia Society with Columbus Chapter acting as host for the occasion. The two-day meeting was held a the Ralston Hotel, Columbus.

Among the many activities at the meeting were a tour of industrial plants in the area, a fish fry, square dance, golfing, swimming, and dancing. On the business side, NSPE President Alan G. Stanford of Georgia told the group that in his visits to various state societies he had found keen interest in all activities which tend to strengthen professional engineering practices and safeguard public interests.

Distinguished visitors from Alabama, where it is hoped a new NSPE State Society will emerge shortly, included Percy G. Cowin, Thomas A. Riddle, and George Miller.

Another highlight of the meeting was the presentation of a banner to the Georgia Society by President Stanford. President Harry Robert of the Georgia Society accepted the gift from his fellow Georgian on behalf of the Society.

NSPE Member-Educator Heads ASEE for 1949-50

A veteran NSPE member has been named president of the American Society for Engineering Education for the 1949-1950 term.

He's Dean Thorndike Saville of New York University's college of engineering and an authority on hydraulic and sanitary engineering. He's held his New York University post since 1936, and has served as a consulting engineer for many public and private groups.

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Crystal Ball...

(*Continued from Page* 5)

The study of influences not found in the usual pattern of former events may lead to conclusions quite different from those normally expected. Let us now examine the record of civilization in other parts of the world and the changing conditions induced by man's ever widening conquest over time and space.

There is today still in existence a civilization which except for a few minor fluctuations is substantially the same as it was four thousand years ago. In the arts, literature and philosophy, no civilization has produced anything to surpass that of the Chinese. It has been stated by competent authority that the mental capacity of the average Chinest exceeds that of any of the races of mankind. They were civilized at a time when our own ancestors wore skins for clothing and painted their bodies blue. Do not forget that silk and fine fabrics, porcelain, paper, block printing, the navigation compass and gunpowder came to us from China centuries ago. To be sure China has been invaded many times, but its population is so vast that the spawn of the conqueror has been completely dissolved in the turbulence of the great life stream of its humanity.

The fellahin of Egypt still cultivate the lands of the Nile much as they did six thousand years ago in the days of the Pharaohs. Except for gunpowder, old world vices, and superstitions and the scourge of military art, what did the Spanish conquistadores bring to the Aztecs of Mexico and the Incas of Peru? It is questionable whether the descendents of these peoples enjoy as high a state of civilization as they did in the thirteenth century.

We have been taught that the fall of Rome was a cataclysm of transcendent importance, that in the year 410 the civilized world came to an end. Removed from the possibility of verification, the idea of a serene and splendid Roman world-supremacy grew up in the imagination of mankind. The tradition of the world empire of Rome and the legend of the supremacy of the Caesars hold to this day.

What are the real facts? H. G. Wells points out that about the kingdom taken by the Vandals "facts and figures" are given that show very clearly the true nature of these barbarian eruptions. They were not really the conquest and replacement of one people or race by another; what happened was something very different—it was a social revolution started and masked by a superficial foreign conquest.

Advances Cited

Because of the advance of science and engineering, the drudgery of the slave is disappearing from the face of the earth. He is being supplanted by the machine. In many communities, the humblest citizen can command the services of a thousand slaves by the flick of an electric switch. The electric fan replaces the nubian slaves who wielded their giant fans of palm leaf and feathers giving relief from the heat of the African summer to the fair Cleopatra and the ladies of her entourage. The galley slave no longer pulls at his oars: he was expendable, even as coal and oil in our day are expendable. Those who did not die were soon exhausted and were replenished as casually as the filling of bins or tanks with fuel.

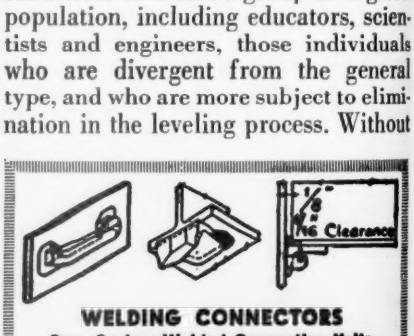
Although we are still living in the penumbra of the dark ages, and slavery has not been entirely eliminated from the earth, as for example in certain totalitarian states, the dawn will break eventually and slavery will be a thing of unpleasant memory. There will be no dangerous or effective fifth columns in lands when the people are reasonably contented, and opposition to the invader will be vigorous and determined.

We may safely conclude that the day is probably passing when wholesale invasion and permanent occupation by one people into the domain of another, will be the mode of conquest and government. The colonial empires of the British and others will be succeeded by the ideological imperialism of the Russians or the economic imperialism of the United States. Swift means of travel and communications will make actual military occupation of "spheres of influence" unnecessary or even undesirable. Invasion is being replaced by immigration. In this country, for example, Boston has been "captured" by the Irish, New York by the Jews and the Northwest by the Scandinavians.

The diversity resulting from the amalgamation of conquered races with the invaders and which can be construed to be essential to the successive peaks of advanced civilization as in the past is becoming a continuous process. Our population contains large groups from all the important nations. Few of these peoples have been here for 10 generations and most of them for less than five. Mixing of the elements now here has only begun, and will not become complete for four or five centuries. The civilization based upon this mixture is advancing rapidly and still the old civilization transplanted from Europe has not ended.

Under the laws of natural selection, species unsuited to a particular environment disappear and only those better fitted to survive remain. The surviving forms become more or less alike and are less adaptable to a changed environment, and are lost when conditions change. In mankind, the influence of society reduces individuals to a common denominator. . . . From infancy to old age those who conform to the conventions encounter less resistance and find life more comfortable. Divergent types leave fewer descendents, and ability is lowered to a dead level.

The elements which characterize a higher state of civilization spring from the efforts of a small group in a given population, including educators, scientists and engineers, those individuals who are divergent from the general type, and who are more subject to elimination in the leveling process. Without



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these people, civilization cannot be long maintained.

As Professor Arnold Toynbee seeks to demonstrate in his recent work "A Study of History," there appears to be no direct connection between a civilization's technical achievement and its growth or decline. Techniques have often continued unimpaired, or have even been improved, long after a society is clearly on the downward path of disintegration. Witness the Greeks and Romans, who had accumulated an impressive array of technical achievements by the beginning of the Christian era, and were still steadily pressing forward in the technical front—but whose civilization had begun its breakdown four centuries before, in the Athens-Peloponesian War.

Challenge Outlined

Breakdown of a civilization occurs when the creative minority, the leaders, lose their creative power—in short, when normal or spiritual sterility sets in. And it may well be that the great challenge our society must meet, in order to survive, is its own materialism.

There are some fundamental questions which have long vexed humanity which have been discussed in antiquity and which will be explored again and again. Has man so destroyed the resources of his world and been so clever about increasing his life span that spawning continually in geometric progression he is doomed to die of starvation? If the problem of world production can be solved to yield at least a minimum living for all, how can we effect equitable and benign world distribution especially in those areas *we* now regard as underdeveloped?

We must bear in mind that there are many who do not look upon our civilization with favor, and that in our own midst we harbor self-imposed slums who resent the efforts of uplifters, professional and more nobly inspired.

Would it be a decent and worthwhile world merely to be well-fed and well-clothed as our sole accomplishment? We must consider the satisfactions of the intellect, or what is known to many as matters of the spirit. How about the education needed to produce a wiser, a healthier, a safer and a happier people? Is this to be found in specialization? In the process of creating brilliant specialists is there risk that we shall have a race of educated ignoramuses; a race in which the most important decisions made by man will ultimately be left to ordinary intellects because the stronger ones have been concentrated into conflicting essences?

Is there risk that in the growth of large organizations and especially of government, the light of the true spirit of free inquiry which has brought us thus far on our road will be dimmed or even utterly extinguished?

I do not pretend to speak with the voice of prophecy, but the answers to some of these questions might lie in the spreading of birth control, the sterilization of the unfit and the merciful practice of euthanasia; the adoption of a universal cosmotheistic religion with the brotherhood of man as its chief ethic and recognizing that since the laws of nature are found to be reliable and immutable, the possibility that nature itself may be God as its chief postulate.

With the constant agitation of society by continuous accretions of new elements there is a chance that the diversity so necessary to progress will be maintained. Differences in geography and climate will prevent a dead level of uniformity among the peoples of the earth.

Despite atomic bombs, despite bacteriological warfare, despite all horrible instruments of destruction devised by the misuse of science, civilization cannot now be completely destroyed, cannot be obliterated by man and his works. Its seed has now been scattered over wide areas, it takes root apace, and growth becomes more luxuriant as the years roll down the highway of eternity. The world-wide dissemination of knowledge and the dispersion of civilized populations throughout the world and in rural areas will make that unhappy event impossible, in spite of retrogressions induced by conflicts ideological or otherwise. We have the necessary differences in populations and variation of climate and other world conditions to prevent the deadening effect of uniformity, and unless there is complete moral bankruptcy the majority of mankind can look forward to the enjoyment of the fruits of progress, and the pursuit of happiness.

This is Houston—NSPE Annual Meeting Headquarters

The impressive skyline pictured above is not New York or Chicago. It is the fastest growing city in the United States—Houston, Texas—scene of the NSPE Annual Meeting this coming December. Full details about the meeting will be carried in the November issue of this magazine but we carry the warning now that you will miss the best Annual Meeting ever if you don't come to Houston. Sponsors of the meeting, The Texas Society of Professional Engineers, have promised that nothing is or will be left undone and in true Texas style it will be the "biggest and the best."

Fire...

(*Continued from Page* 3)

small roof section and toss fire brands on it.

How will wired-glass, steel frame windows stand up during a fire? Many schools, factories, and other buildings depend on them for protection. The engineers test them by building such windows into the front wall of a large furnace, exactly as they would be installed in a building wall. Then they light the furnace and let roaring gas flames bathe the window from top to bottom for 45 minutes, until the temperature reaches 1640 degrees Fahrenheit—almost eight times the temperature of boiling water. Then the window is rolled from the furnace, and a fire hose plays a stream of water on the red-hot surface. To pass the test, the glass must remain in place, prevent all passage of flame, and must still serve as a substantial barrier to the spread of fire after the water is played on it.

Underwriters' Laboratories started as a two-man enterprise back in 1894. One of the founders had been called in to help out at the first great world's fair in Chicago, where the wonders of the newly perfected incandescent light bulbs were being demonstrated. The trouble was that the use of electricity was not fully understood then, and every few days one of the electric circuits would catch fire. Young William Henry Merrill was hired by a group of insurance companies to examine the wiring after each blaze, decide what had caused the fire, and then see that it didn't happen again.

Another young man named William C. Robinson was experimenting at the same time with a device which would put out fires by sprinkling water on them, and would go into operation automatically as soon as the temperature in a room became hotter than it should be.

Preventive Action

These two men joined forces, and began a "before and after" fight against fire. They were interested in preventing them before they started and fighting them efficiently once they had begun. That was the beginning of Underwriters' Laboratories, which has served as the official testing station of the National Board of Fire Underwriters during the subsequent fifty-four years.

Up until 1917, the organization was supported largely by contributions from capital stock fire insurance companies. In 1917, it was reorganized on a strictly non-profit basis, supported only by fees paid by manufacturers submitting products for test.

Through the years the laboratories have expanded constantly. As more and more people began to "look for the Underwriters' label," manufacturers began sending in everything from household fuses to $10,000 heating plants for inspection, and asking inspectors to come to banks to look over alarm systems for vaults containing millions of dollars.

In every case, the laboratories make certain that manufacturers maintain safety standards by periodically buying inspected products on the open market and retesting them. If a device fails the open-market test, the company must immediately correct the deficiency.

The variety of products tested increases daily. Television sets and fire-resistant paints are examined as well as air-conditioning systems, fire extinguishers, elaborate tear-gas protective sysems for banks, and literally thousands of other items. But, regardless of how varied their work becomes, the engineers are still chiefly interested in the answer to one simple question: Is this product safe? They find the answer and "state the facts."

Bond Sales Down, Registration Activity Up

Bond sale activity for the home of the Illinois Society has somewhat slowed down, but this is accounted for by the polio epidemic which caused cancellation of several chapter meetings.

The Illinois Society, with the cooperation of the University of Illinois, is laying plans to make the Professional Engineering Refresher Courses available to as many embryo engineers as is physically possible. Courses are scheduled for Chicago, East St. Louis, Decatur, Springfield, and Peoria.

ISPE has prepared a reprint of the last two examinations which are available in the office of the Secretary for $1.00. The Professional Engineering Examining Board has decided to issue certificates to those who pass the EIT examination.

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Alcoa Host to Arkansas Meet

Regular quarterly meeting of Arkansas Society found more than 150 on tap as guests of the Aluminum Company of America at Bauxite, Ark. A fish fry and barbecue, followed by Arkansas watermelons, were features of the meeting. Shown in the pictures are (top left) NSPE Vice President L. L. Dresser and Arkansas President Wales; 2, 3 and 5, proof of the abundance of food; and 4, the Alcoa official host inviting "come and get it."

Cooperate with Board, Stanford Tells Sooners

Talking to over one hundred members of the Oklahoma Society of Professional Engineers, NSPE President Alan G. Stanford told the Oklahoma City group of the great importance of close cooperation between the state societies and the state registration boards. Stanford spoke from personal experience as well as his official NSPE role, being a member of the registration board in Georgia. The Oklahoma Society came in for some criticism, on this score, for having provision in its by-laws which excludes registration board members from being officers or directors in the Oklahoma Society.

The NSPE President also told the group of the constructive work that NSPE is doing for engineers and urged an even greater program of activity on all three levels—local, state, and national. NSPE Vice President L. L. Dresser, Tulsa, introduced President Stanford.

Nominees for Milwaukee

The nominating committee of Milwaukee Chapter (Wisc.) has picked the following nominees as officers for 1950:

President, LaRue H. Stark; Vice President, Ray E. Behrens; Director, Wisley C. Lallier (3 years); Secretary-Treasurer, Robert H. Hopwood.

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Kings County Asks Link With Engineer in Name Choice

A resolution petitioning the city authorities to name the new building of the board of transportation in the Brooklyn civic center as Ribert Ridgway building has been passed by the Kings County (N. Y.) Chapter. The resolution asks support of other engineering organizations in seeking such a name.

Ridgway was for many years chief engineer and a consulting engineer to the transportation body, being in charge of all the planning, design and construction of all the subways for the city of New York.

Lorain (Ohio) Chapter — Clifford Bough, president; Ross Herrick, vice-president; D. E. Starkey, secretary-treasurer.

* * *

Huntington (W. Va.) Chapter—Paul G. Davis, president; Fred R. Toothman, first vice-president; Tom Stark, second vice-president; C. P. Shaw, secretary-treasurer; Fred R. Palmer, Droman M. Miller, directors.

* * *

Canton (Ohio) Chapter—E. C. Coldren, president; Everett P. Hamilton, first vice-president; Wilbur Sponseller, second vice-president; Karl Snyder, Chester Muckley, and Harrison Sherer, trustees; Douglas T. McGreth, secretary-treasurer.

* * *

Logan (W. Va.) Chapter—A. S. J. Hopkins, president; John D. Derry, 1st vice-president; Henry W. Bauer, 2nd vice-president; P. M. Vannoy, secretary-treasurer.

* * *

Northern Panhandle (W. Va.) Chapter — Robert MacDonald, president; Creed Malone, vice-president; William Kaiser, secretary-treasurer; Allen Bumgardner, William Van Wie, directors; C. B. Christianson, state director.

* * *

Northeast (Ohio) Chapter — Frank W. Shelton, Jr., president; Fred A. Collins, vice-president; R. M. Plummer, secretary-treasurer; E. B. Humphrey, F. R. Zethmayr, and C. C. Hadden, trustees.

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